

REPTILIA: SQUAMATA: SERPENTES: LEPTOTYPHLOPIDAE

Catalogue of American Amphibians and Reptiles.

HAHN, DONALD E. 1979. *Leptotyphlops dulcis*.

***Leptotyphlops dulcis* (Baird and Girard)**
Texas blind snake

Rena dulcis Baird and Girard, 1853:142. Type locality "between San Pedro and Camanche [sic] Springs, Tex." Holotype, U.S. Nat. Mus. 7296, adult, collected by Col. J. D. Graham, date and sex not given (not examined by author).

Stenostoma dulce: Cope, 1861:305.

Stenostoma rubellum Garman, 1883:130. Type locality, "Uvalde, Texas." Holotype, Museum of Comparative Zoology, Harvard 4584, adult, collected by Dr. Edward Palmer in 1880, sex not stated (not examined by author).

Leptotyphlops dulcis: Stejneger, 1891:501.

Glauconia dulcis: Cope, 1892:590.

• **CONTENT.** Three subspecies are recognized: *dulcis*, *dissectus*, and *myopicus*.

• **DIAGNOSIS.** *L. dulcis* can be distinguished from other North and Middle American species of the genus by the following characteristics: supraoculars present and of nearly equal size to the prefrontal or frontal; 10 scale rows around tail; and parietals in contact with posterior supralabials.

• **DEFINITION.** This is a large *Leptotyphlops* species up to 293 mm in total length. One or two upper labials are anterior to the ocular; and parietals are in contact with posterior supralabials. Dorsal scale rows (vertebrals) number 199–255; subcaudals 11–17. The mean of body length/diameter ranges from 50 to 54 in the 3 subspecies; mean of body length/tail length ranges from 18 to 22. Hemipenes of *L. d. dulcis* are "unbifurcated, smooth, and deeply grooved to the ends, by a single, ridged sulcus" (Klauber, 1940).

• **DESCRIPTIONS.** The best descriptions are in Klauber (1940).

• **ILLUSTRATIONS.** The best head scale drawings appear in Taylor, 1939 (*myopicus* and *dulcis*); Klauber, 1940 (*dulcis* and *myopicus*); Stebbins, 1954 and 1966; and Conant, 1975 (*dulcis* and *dissectus*). Good photographs appear in Wright and Wright, 1957 (*dulcis* and *dissectus*); Gehlbach, Watkins and Reno, 1968 (*dulcis*); Collins, 1974 (*dissectus*); and Conant, 1975. List (1966) figures the skull and other osteological features. Bellairs (1970) also figures the skull.

• **DISTRIBUTION.** *L. dulcis* occurs in plains and semiarid regions from sea level to 1585 meters. It ranges from south central Kansas, southward to northern Veracruz, and westward to extreme southeastern Arizona. The best distribution maps are in Klauber (1940), Stebbins (1954, 1966), Wright and Wright (1957), and Shaw and Campbell (1974). Smith and Smith (1976) list numerous papers giving Mexican locality records.

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** Klauber's (1940) revision is the most comprehensive work on the taxonomy and ecology of this species, and provides a summary of distributional data and a review of the literature prior to 1940. Wright and Wright (1957) summarize most of the published life history and ecological data for United States subspecies. Punzo (1974), Reid and Lott (1963), Force (1936), Burt (1935), Watkins et al. (1967, 1970, 1972), Hibbard (1964), McCoy (1960), Gehlbach (1970), and Gehlbach et al. (1968) discuss various aspects of behavior. Blum et al. (1971) analyze the chemical composition of the cloacal sac secretions. Fitch (1970) summarizes reproductive data. Fleet (1972) discusses sexual dimorphism. Gabe and Martoja (1961), H. Saint Girons (1970), Gabe and Saint Girons (1976), Jackson and Reno (1975), Kroll and Reno (1971), Kroll (1973), M. C. Saint Girons (1970), Brongersma (1958), Fox (1965), Jackson (1971, 1977), Gabe and Saint Girons (1969), and Langebartel (1968) describe and discuss various anatomical structures.

• **ETYMOLOGY.** The Latin *dulcis* means sweet; *myopicus* is derived from the Latin *myops* meaning short-sighted; *dissectus* is derived from the Latin *dis* = twice + *sectus* = cleft, referring to the condition of the 1st labial.

1. *Leptotyphlops dulcis dulcis* (Baird and Girard)

Rena dulcis Baird and Girard 1853:142. See species synonymy. *Leptotyphlops dulcis dulcis*: Klauber, 1940:108.

• **DIAGNOSIS.** Differs from other races by having undivided anterior supralabials. Dorsal number 206–255 (\bar{x} = 228), and subcaudals number 12–17 (\bar{x} = 14.6).

2. *Leptotyphlops dulcis dissectus* (Cope)

Glauconia dissecta Cope, 1896:753. Type-locality "at the silver mines at Lake Valley, southern New Mexico." Holotype, Academy of Natural Sciences, Philadelphia 10752, adult, collected by Edward D. Cope, date and sex not given (not examined by author).

Leptotyphlops dulcis dissectus: Klauber, 1940:112.

Leptotyphlops myopicus dissectus: Smith and Sanders, 1952:216.

• **DIAGNOSIS.** Differs from other races in having a combination of anterior supralabials being divided vertically, and dorsals number more than 224 (224–246, \bar{x} = 238). Subcaudals number 12–16 (\bar{x} = 13.9).

• **REMARKS.** Smith (1944), Smith and Sanders (1952), and Smith and Smith (1976) consider *dulcis* and *myopicus* distinct species, with *dissectus* a race of *L. myopicus*. Webb (1970) provides contrary evidence.

3. *Leptotyphlops dulcis myopicus* (Garman)

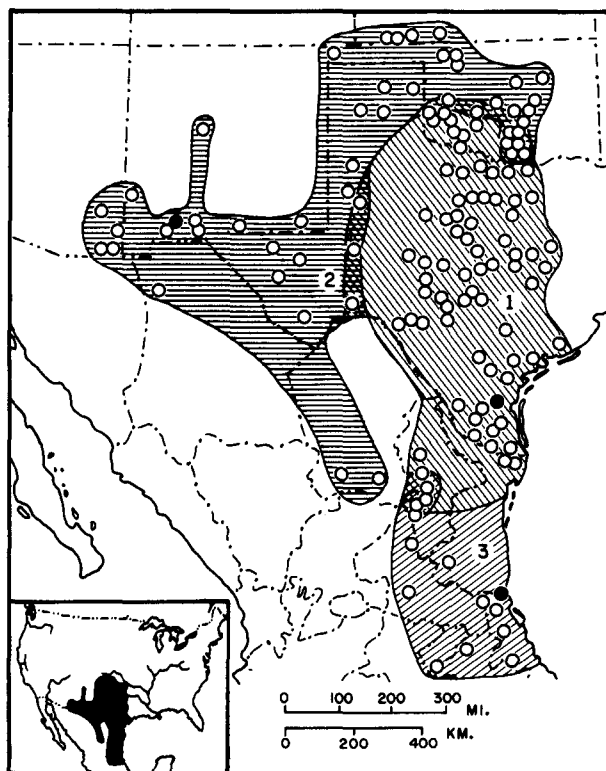
Stenostoma myopicum Garman, 1883:6. Type-locality, "Savineto near Tampico, Tamaulipas, Mexico." Syntypes, Museum of Comparative Zoology, Harvard 4526, and Field Museum of Natural History 73386 (2), adults collected by Dr. Edward Palmer in 1879; sex not stated (not examined by author).

Glauconia myopica: Boulenger, 1893:69.

Leptotyphlops myopica: Barbour and Loveridge, 1929:345.

Leptotyphlops dulcis myopicus: Klauber, 1940:117.

Leptotyphlops myopicus myopicus: Smith, 1944:146.



MAP. Solid circles mark type-localities, open circles indicate other records. Overlapping shading patterns indicate areas of intergradation.

• **DIAGNOSIS.** Differs from other races in having a combination of anterior supralabials being divided vertically, and dorsals number less than 224 (199–222, \bar{x} = 213). Subcaudals number 11–17 (\bar{x} = 14.1).

LITERATURE CITED

- Baird, Spencer F., and C. Girard. 1853. Catalogue of North American reptiles in the museum of the Smithsonian Institution. Part 1.—Serpents. Smithsonian Misc. Coll. 2(5):xvi + 172 p.
- Barbour, Thomas, and Arthur Loveridge. 1929. Typical reptiles and amphibians in the Museum of Comparative Zoology. Bull. Mus. Comp. Zool. 69(10):203–360.
- Bellairs, Angus. 1970. The life of reptiles. 2 vols. Universe Books, New York. xiii + 590 p.
- Blum, Murray S., Jenny B. Byrd, James R. Travis, J. F. Watkins, II, and F. R. Gehlbach. 1971. Chemistry of the cloacal sac secretion of the blind snake *Leptotyphlops dulcis*. Comp. Biochem. Physiol. 38B:103–107.
- Boulenger, George Albert. 1893. Catalogue of the snakes in the British Museum (Natural History). Vol. 1, Taylor and Francis, London. xiii + 448 p.
- Brongersma, L. D. 1958. Upon some features of the respiratory and circulatory systems in the Typhlopidae and some other snakes. Arch. Neer. Zool. 13:120–127.
- Burt, Charles E. 1935. Contributions to Texas herpetology. II. Some observations and an experiment on the worm snake, *Leptotyphlops*. Ecology 16(3):530–531.
- Collins, Joseph T. 1974. Amphibians and reptiles in Kansas. Univ. Kansas Mus. Natur. Hist., Public Ed. Ser. (1):x + 283.
- Conant, Roger. 1975. A field guide to reptiles and amphibians of eastern and central North America. Second edition. Houghton Mifflin Co., Boston. xviii + 429 p.
- Cope, Edward Drinker. 1861. Contributions to the ophiology of Lower California, Mexico and Central America. Proc. Acad. Natur. Sci. Philadelphia 13:292–306.
- 1892. A critical review of the characters and variations of the snakes of North America. Proc. U.S. Nat. Mus. 14:589–694.
- 1896. On a new *Gluconia* from New Mexico. Amer. Natur. 30:753.
- Fitch, Henry S. 1970. Reproductive cycles of lizards and snakes. Univ. Kansas Mus. Natur. Hist., Misc. Publ. (52):1–247.
- Fleet, Robert R. 1972. Notes on the blind snake, *Leptotyphlops dulcis dulcis*, in eastern Texas. Southwestern Natur. 17(3):309.
- Force, Edith R. 1936. Notes on the blind snake, *Leptotyphlops dulcis* (Baird and Girard) in northeastern Oklahoma. Proc. Oklahoma Acad. Sci. 16:24–26.
- Fox, Wade. 1965. A comparison of the male urogenital systems of blind snakes, Leptotyphlopidae and Typhlopidae. Herpetologica 21(4):241–256.
- Gabe, Manfred, and M. Martoja. 1961. Contribution a l'histologie de la glande surrénale des Squamata (Reptiles). Arch. Anat. Microsc. Morphol. Exp. 50(1):1–34.
- , and Hubert Saint Girons. 1969. Données histologiques sur les glandes salivaires des lépidosauriens. Mem. Mus. Nat. Hist. Natur. Paris ser. A, 58(4):1–112.
- , and — 1976. Contribution a la morphologie comparée des fosses nasales et de leurs annexes chez les lépidosoriens. Ibid. 98:1–87.
- Garman, Samuel. 1883. The reptiles and batrachians of North America. Part I, Ophidia. Mem. Mus. Comp. Zool. 8(3):xxxi + 185 p.
- Gehlbach, Frederick R. 1970. Death-feigning and erratic behavior in leptotyphlopoid, colubrid, and elapid snakes. Herpetologica 26(1):24–34.
- , Julian F. Watkins, II, and Harley W. Reno. 1968. Blind snake defensive behavior elicited by ant attacks. Bioscience 18(8):784–785.
- Hibbard, Claude W. 1964. A brooding colony of the blind snake, *Leptotyphlops dulcis dissecta* Cope. Copeia 1964(1):222.
- Jackson, Morris K. 1971. Cutaneous sense organs on the heads of some small ground snakes in the genera *Leptotyphlops*, *Tantilla*, *Sonora* and *Virginia* (Reptilia: Serpentes). Amer. Zool. 11(4):707–708 (abstract).
- 1977. Histology and distribution of cutaneous touch corpuscles in some leptotyphlopoid and colubrid snakes (Reptilia, Serpentes). J. Herpetol. 11(1):7–15.
- , and Harley W. Reno. 1975. Comparative skin structure of some fossorial and subfossorial leptotyphlopoid and colubrid snakes. Herpetologica 31(3):350–359.
- Klauber, Laurence M. 1940. The worm snakes of the genus *Leptotyphlops* in the United States and northern Mexico. Trans. San Diego Soc. Natur. Hist. 9(18):87–162.
- Kroll, James C. 1973. Taste buds in the oral epithelium of the blind snake, *Leptotyphlops dulcis* (Reptilia: Leptotyphlopidae). Southwestern Natur. 17(4):365–370.
- , and Harley W. Reno. 1971. A re-examination of the cloacal sacs and gland of the blind snake, *Leptotyphlops dulcis* (Reptilia: Leptotyphlopidae). J. Morphol. 133:273–280.
- Langebartel, David A. 1968. The hyoid and its associated muscles in snakes. Illinois Biol. Monog. (38):1–156.
- List, James C. 1966. Comparative osteology of the snake families Typhlopidae and Leptotyphlopidae. Illinois Biol. Monog. (36):1–112.
- McCoy, Clarence J., Jr. 1960. An unusually large aggregation of *Leptotyphlops*. Copeia 1960(4):368.
- Peters, James A., and Braulio Orejas-Miranda. 1970. Catalogue of the Neotropical Squamata. Part I. Snakes. U.S. Nat. Mus. Bull. (297):viii + 347 p.
- Punzo, Fred. 1974. Comparative analysis of the feeding habits of two species of Arizona blind snakes, *Leptotyphlops h. humilis* and *Leptotyphlops d. dulcis*. J. Herpetol. 8(2):153–156.
- Raun, Gerald C., and Frederick R. Gehlbach. 1972. Amphibians and reptiles in Texas: taxonomic synopsis, bibliography, and county distribution maps. Dallas Mus. Natur. Hist. Bull. (2):ii + 61.
- Reid, Jack R., and Thomas E. Lott. 1963. Feeding of *Leptotyphlops dulcis dulcis* (Baird and Girard). Herpetologica 19(2):141–142.
- Saint Girons, Hubert. 1970. The pituitary gland, p. 135–199. In C. Gans and T. S. Parsons (eds.), Biology of the Reptilia, Morphology C, Vol. 3. Academic Press, New York.
- Saint Girons, Marie-Charlotte. 1970. Morphology of the circulating blood cells, p. 73–91. In C. Gans and T. S. Parsons (eds.), Biology of the Reptilia, Morphology C, Vol. 3. Academic Press, New York.
- Shaw, Charles E., and S. Campbell. 1974. Snakes of the American West. Alfred A. Knopf, New York. xii + 332 p.
- Smith, Hobart M. 1944. Snakes of the Hoogstraal Expeditions to northern Mexico. Zool. Ser. Field Mus. Natur. Hist. 29(8):135–152.
- , and Ottys Sanders. 1952. Distributional data on Texan amphibians and reptiles. Texas J. Sci. 4(2):204–219.
- , and Rozella B. Smith. 1976. Synopsis of the herpetofauna of Mexico. Vol. 3. Source analysis and index for Mexican reptiles. John Johnson, North Bennington, Vermont. 991 p.
- Stebbins, Robert C. 1954. Amphibians and reptiles of western North America. McGraw-Hill Book Co., New York. xxii + 528 p.
- 1966. A field guide to western reptiles and amphibians. Houghton Mifflin Co., Boston. xiv + 279 p.
- Stejneger, Leonhard. 1891. Notes on some North American snakes. Proc. U.S. Nat. Mus. 14:501–505.
- Taylor, Edward H. 1939. On North American snakes of the genus *Leptotyphlops*. Copeia 1939(1):1–7.
- Watkins, Julian F., II, Frederick R. Gehlbach, and Robert S. Baldrige. 1967. Ability of the blind snake *Leptotyphlops dulcis*, to follow pheromone trails of army ants, *Neivamyrmex nigrescens* and *N. opacithorax*. Southwestern Natur. 12(4):455–462.
- , —, and James C. Kroll. 1970. Attractant-repellent secretions in the intra- and interspecific relations of blind snakes (*Leptotyphlops dulcis*) and army ants (*Neivamyrmex nigrescens*). Ecology 50(6):1098–1102.
- , —, and Robert W. Plsek. 1972. Behavior of blind snakes (*Leptotyphlops dulcis*) in response to army ants (*Neivamyrmex nigrescens*) raiding columns. Texas J. Sci. 23:556–557.
- Webb, Robert G. 1970. Reptiles of Oklahoma. Univ. Oklahoma Press, Norman. xi + 370 p.
- Wright, Albert Hazen, and Anna Allen Wright. 1957. Handbook of snakes of the United States and Canada. 2 Vol. Comstock Publ. Assoc., Ithaca, New York. xxvii + 1105 p.

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